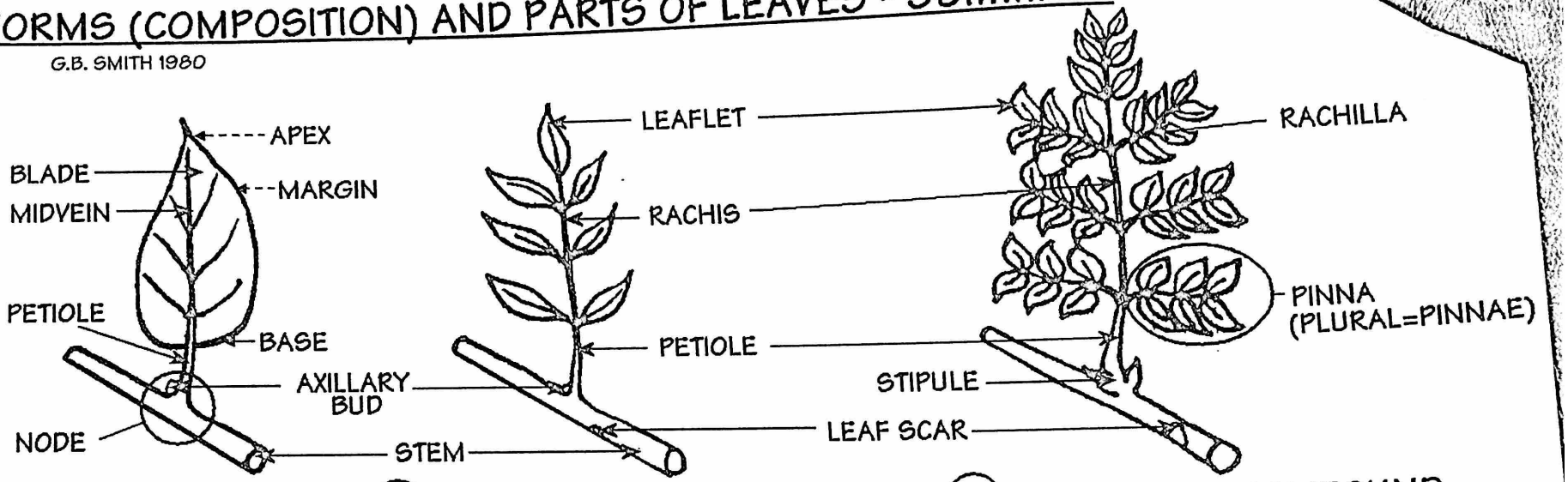
FORMS (COMPOSITION) AND PARTS OF LEAVES - SUMMARY

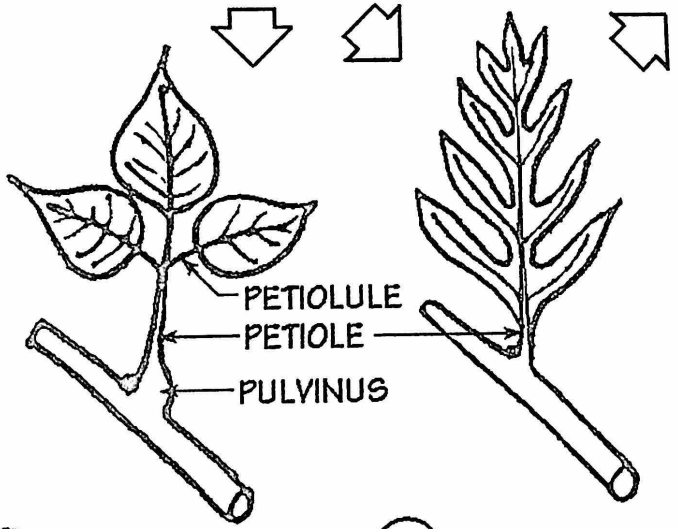
G.B. SMITH 1980



A. SIMPLE PINNATE (SHAPED LIKE A FEATHER)

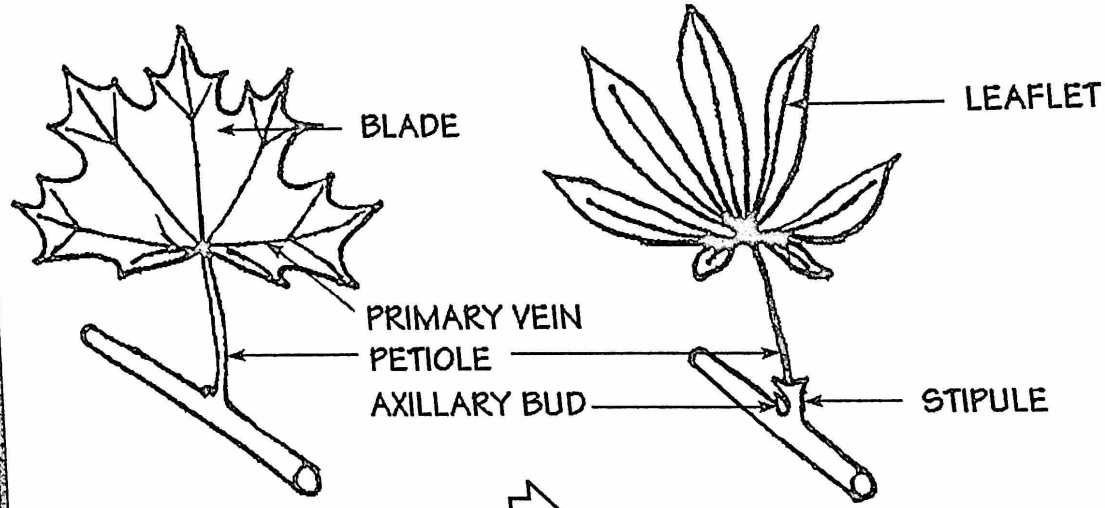
B. PINNATELY COMPOUND (BLADE DIVIDED INTO LEAFLETS)

C. BIPINNATELY COMPOUND (LEAFLET FURTHER DIVIDED INTO A PINNA WITH LEAFLETS)



D. TRIFOLIATE (BLADE DIVIDED INTO THREE LEAFLETS)

E. PINNATIFID (BLADE DEEPLY NOTCHED BUT NOT DIVIDED)



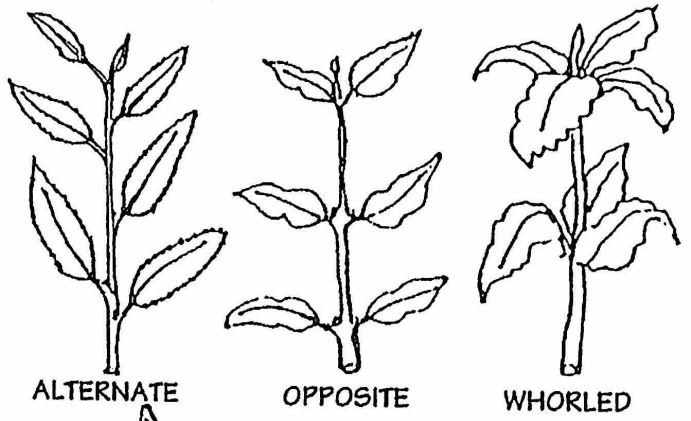
F. SIMPLE PALMATE (PRIMARY VEINS RADIATE FROM A COMMON POINT)

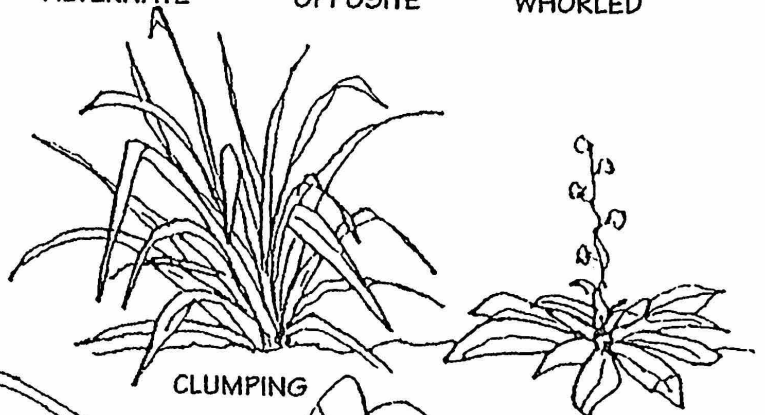
G. PALMATELY COMPOU (BLADE DIVIDED INTO SEVERAL LEAFLETS)

(** ALL EXAMPLES ON THIS SHEET ARE DICOTS)

H. SOME POINTS TO REMEMBER:

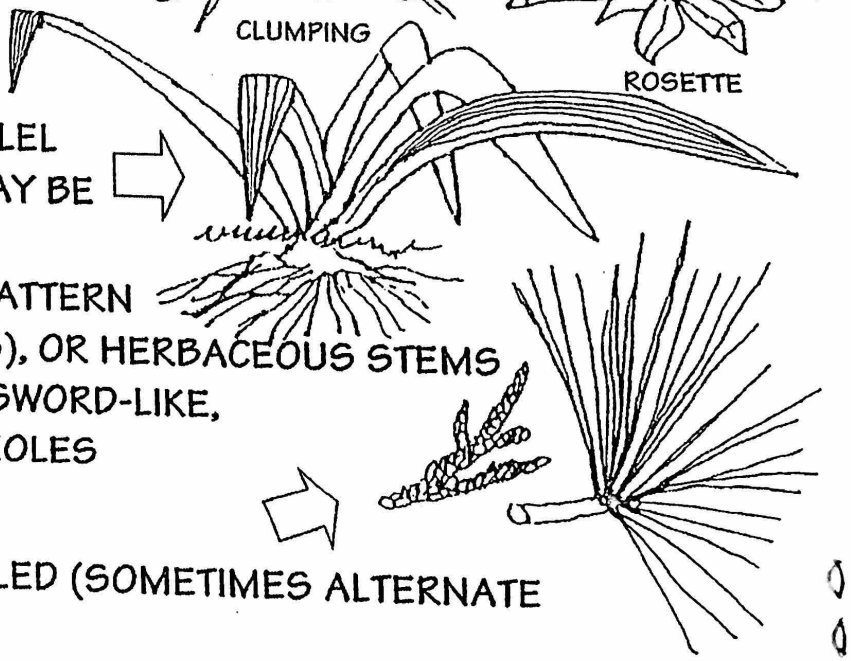
- ALL LEAF FORMS ON THE PRECEEDING SHEET (DICOTS) TEND TO HAVE A DEFINITE PATTERN OF ARRANGEMENT WHICH IS CHARACTERISTIC FOR A GIVEN SPECIES:
  - -ALTERNATE, -OPPOSITE, -WHORLED ⇨ FOUND ON BOTH HERBACEOUS AND WOODY SPECIES
  - -CLUMPING, -ROSETTE ⇨ CONFINED MOSTLY TO HERBACEOUS SPECIES
- LOOK FOR AXILLARY BUDS - THESE ARE ALWAYS PRESENT AT THE POINT OF ATTACHMENT OF LEAF TO STEM -- HELPS IN DISTINGUISHING BETWEEN SIMPLE AND COMPOUND LEAVES
- SOMETIMES THE AXILLARY BUDS ARE TINY AND HARD TO LOCATE -- IF THIS IS THE CASE, LOOK FOR THE PRESENCE OF LEAF SCARS ALONG THE STEM
- DICOTS HAVE THE SMALLEST VEINS ("NERVES") OF A LEAF OR LEAFLET ARRANGED IN A "NETTED" PATTERN





I. MONOCOT LEAVES:

- HAVE THE SMALLEST VEINS ARRANGED IN PARALLEL PATTERN (EVEN THOUGH OVERALL LEAF FORM MAY BE FAN-SHAPED, FLESHY, ETC.
- ARE PREDOMINANTLY ARRANGED IN CLUMPING PATTERN FROM A BASAL UNDERGROUND STEM (OR STEMS), OR HERBACEOUS STEMS
- ARE PREDOMINANTLY ELONGATED, GRASS-LIKE, SWORD-LIKE, OR STRAP-LIKE IN SHAPE AND LACK DEFINITE PETIOLES

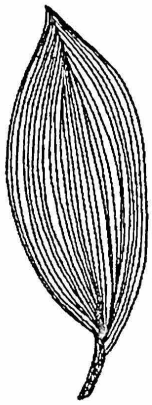


J. CONIFER LEAVES:

- ARE MOSTLY NEEDLE-LIKE OR SCALE-LIKE, WHORLED (SOMETIMES ALTERNATE OR OPPOSITE) ON WOODY STEMS

BASIC LEAF FORMS

1



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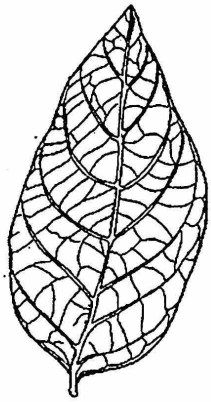

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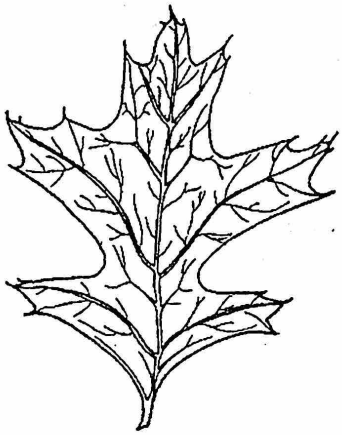
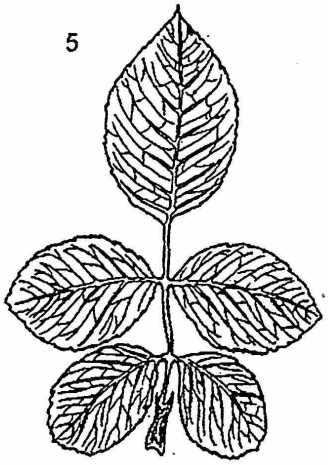


4

5



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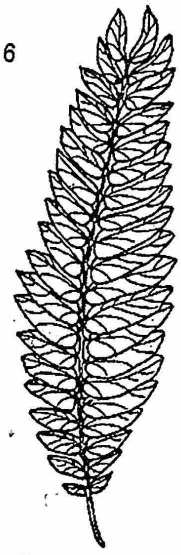

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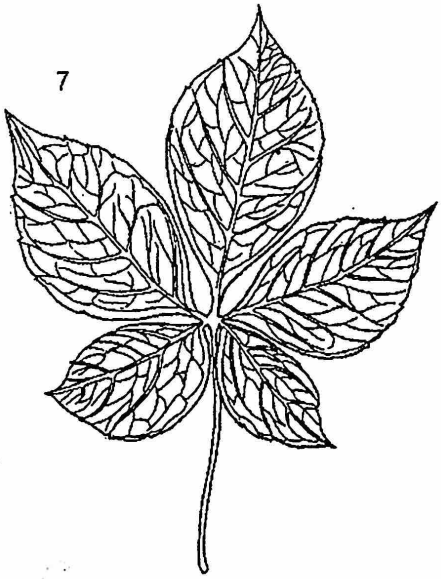


1. Parallel venation
2. Netted venation
3. Pinnately lobed
4. Palmately lobed

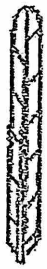
5. Odd pinnately compound
6. Even pinnately compound
7. Palmately compound

LEAF SHAPES


Elliptic

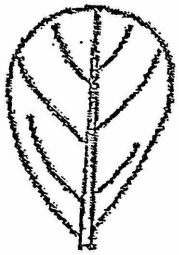

Filiform

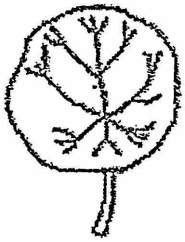

Lanceolate

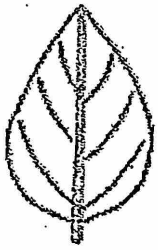

Linear

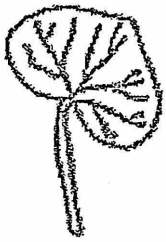

Oblanceolate

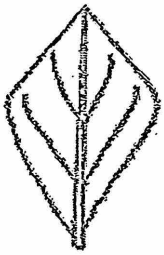

Oblong


Obovate


Orbicular


Ovate

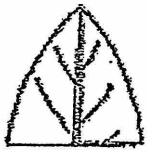

Reniform or Kidney

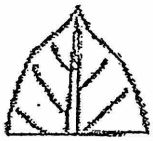

Rhomboid


Spatulate

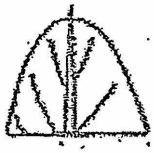
LEAF APICES


Acuminate


Acute


Cuspidate


Emarginate

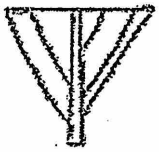

Mucronate


Obtuse

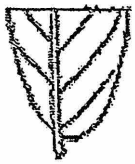
LEAF BASES

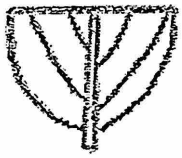

Auriculate

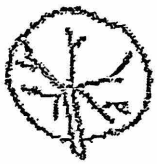

Cordate

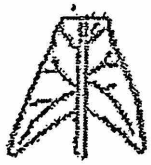

Cuneate


Decurrent


Oblique


Obtuse

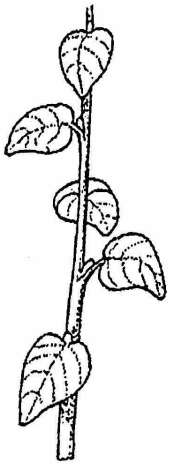

Peltate


Sagittate

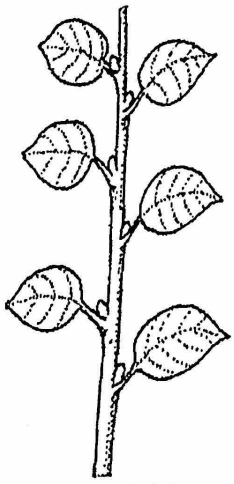

Sheathing


Truncate

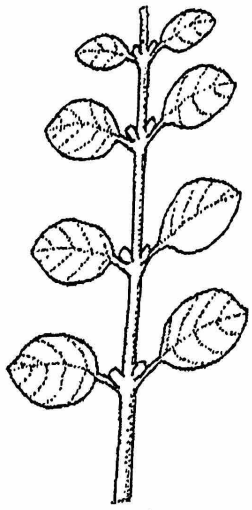
Leaf Arrangements



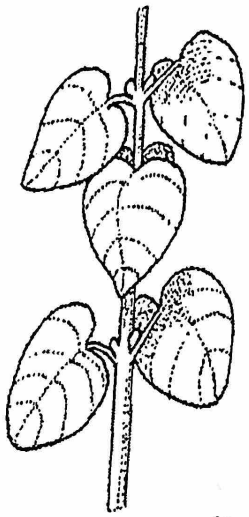
Alternate



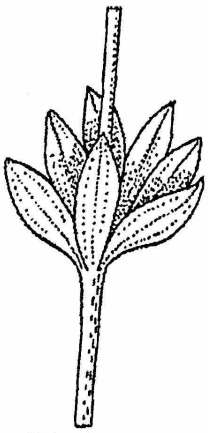
Alternate, distichous



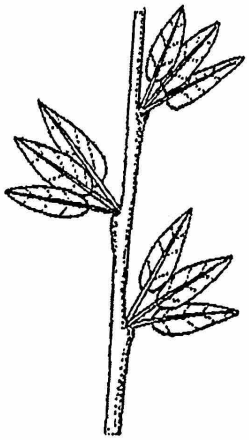
Opposite



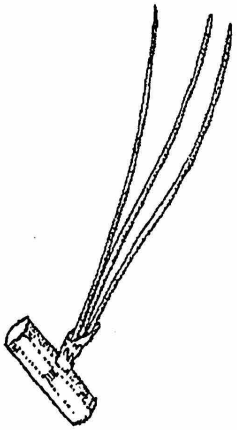
Opposite, decussate



Whorled



Clustered

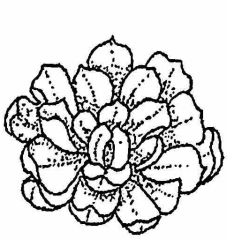


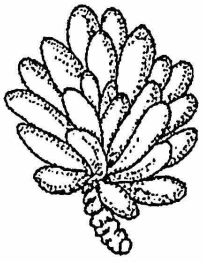
Fascicled

Imbricate

Equitant

Equitant in cross section



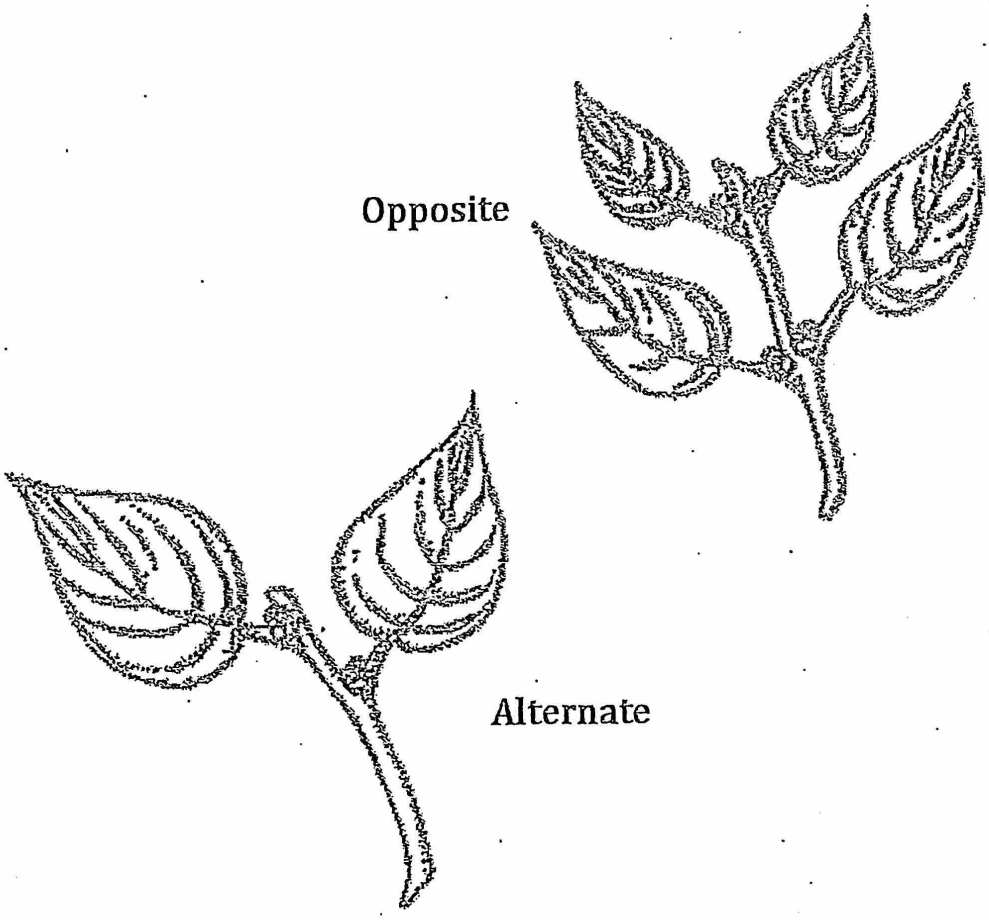


Rosulate, two examples

FROM: The Illustrated Glossary of Botanical Terms
Cambridge University Press, 2000

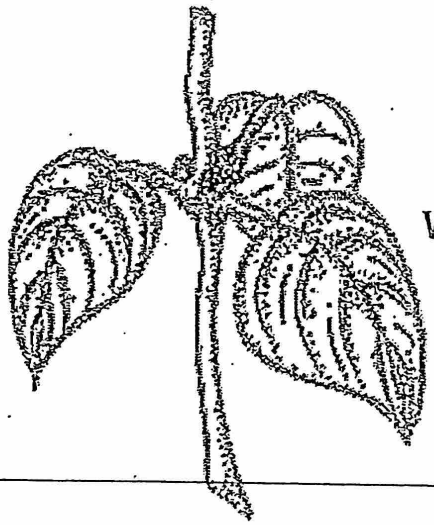
Leaf Arrangement

Opposite

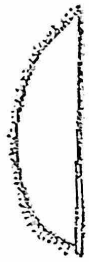


Alternate

Whorled



LEAF MARGINS



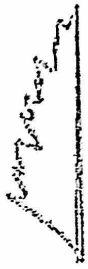
Ciliate

Cleft

Crenate

Dentate

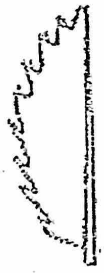
Entire



Incised

Lobed

Serrate

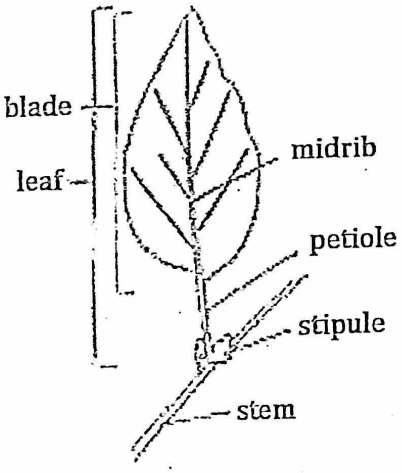


Doubly Serrate

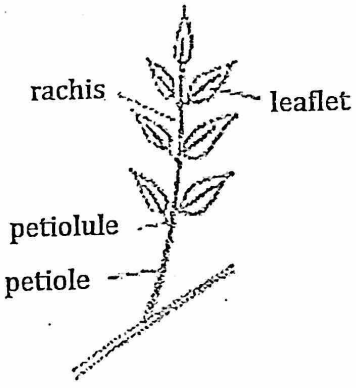
Serrulate

Sinuate

LEAF TYPE

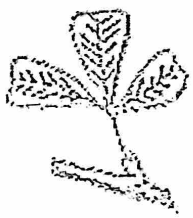


Simple

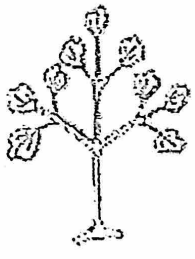


Pinnately Compound

Palmately Compound

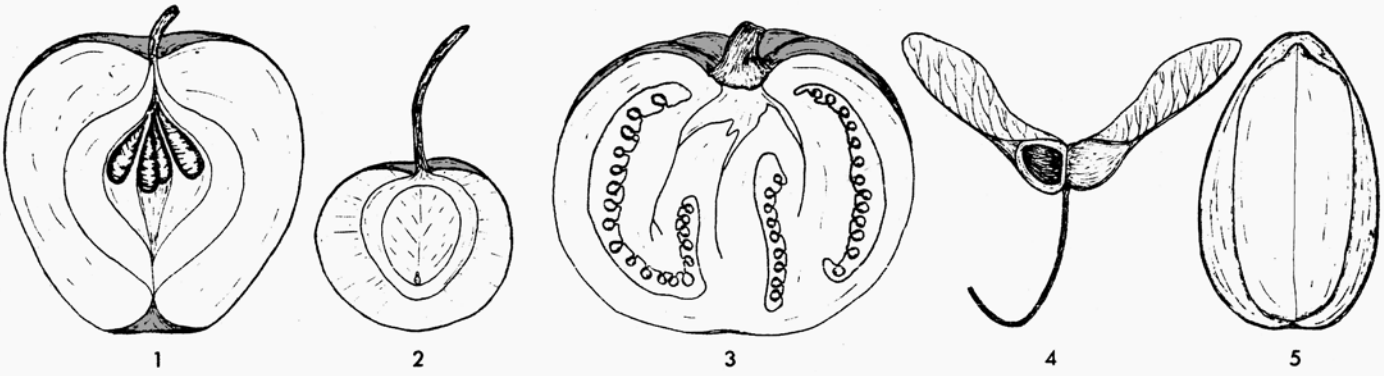


Trifoliate or Ternate

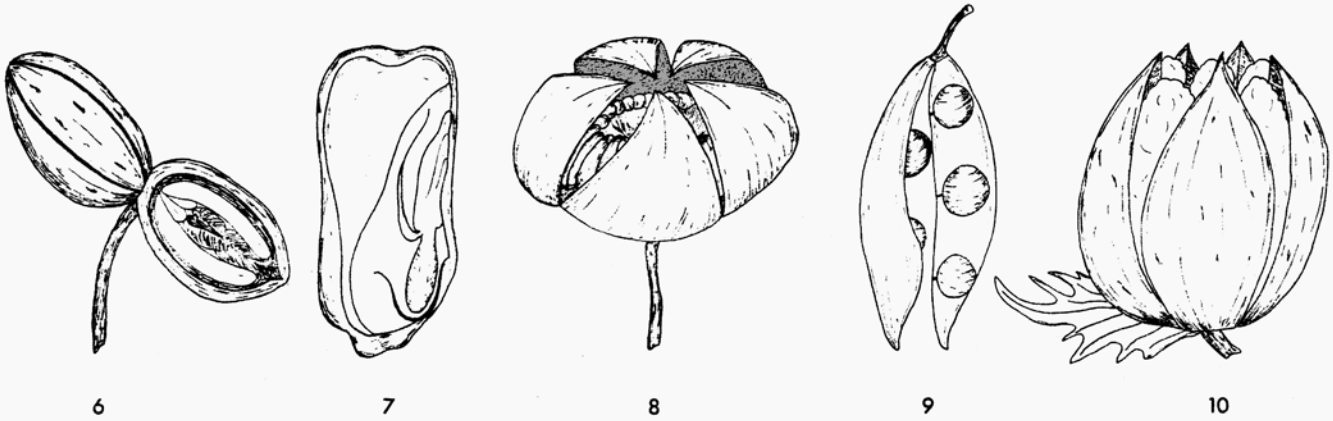


Biternate

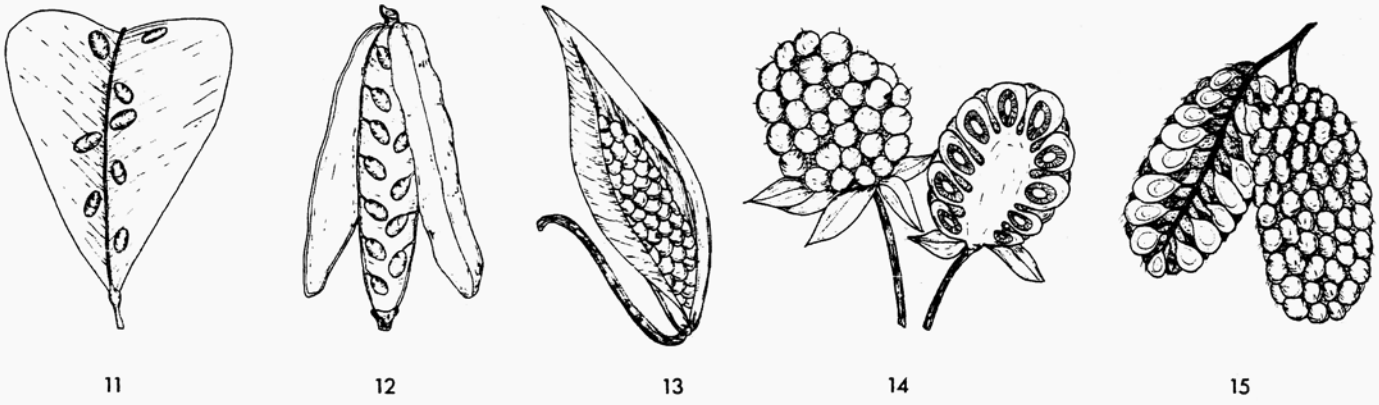
FRUIT TYPES



1 2 3 4 5



6 7 8 9 10



11 12 13 14 15

Simple Fruit
- Fleshy
  1. Pome (apple)
  2. Drupe (cherry)
  3. Berry (tomato)
- Dry, indehiscent
  4. Samara (maple)
  5. Achene (sunflower)
  6. Nut (pecan)
  7. Grain (corn)
  8. Schizocarp (geranium)

Simple Fruit
- Dry, dehiscent
  9. Legume (pea)
  10. Capsule (cotton)
  11. Silicle (shepherd's purse)
  12. Silique (mustard)
  13. Follicle (milkweed)

14. Aggregate fruit (blackberry)
15. Multiple fruit (mulberry)

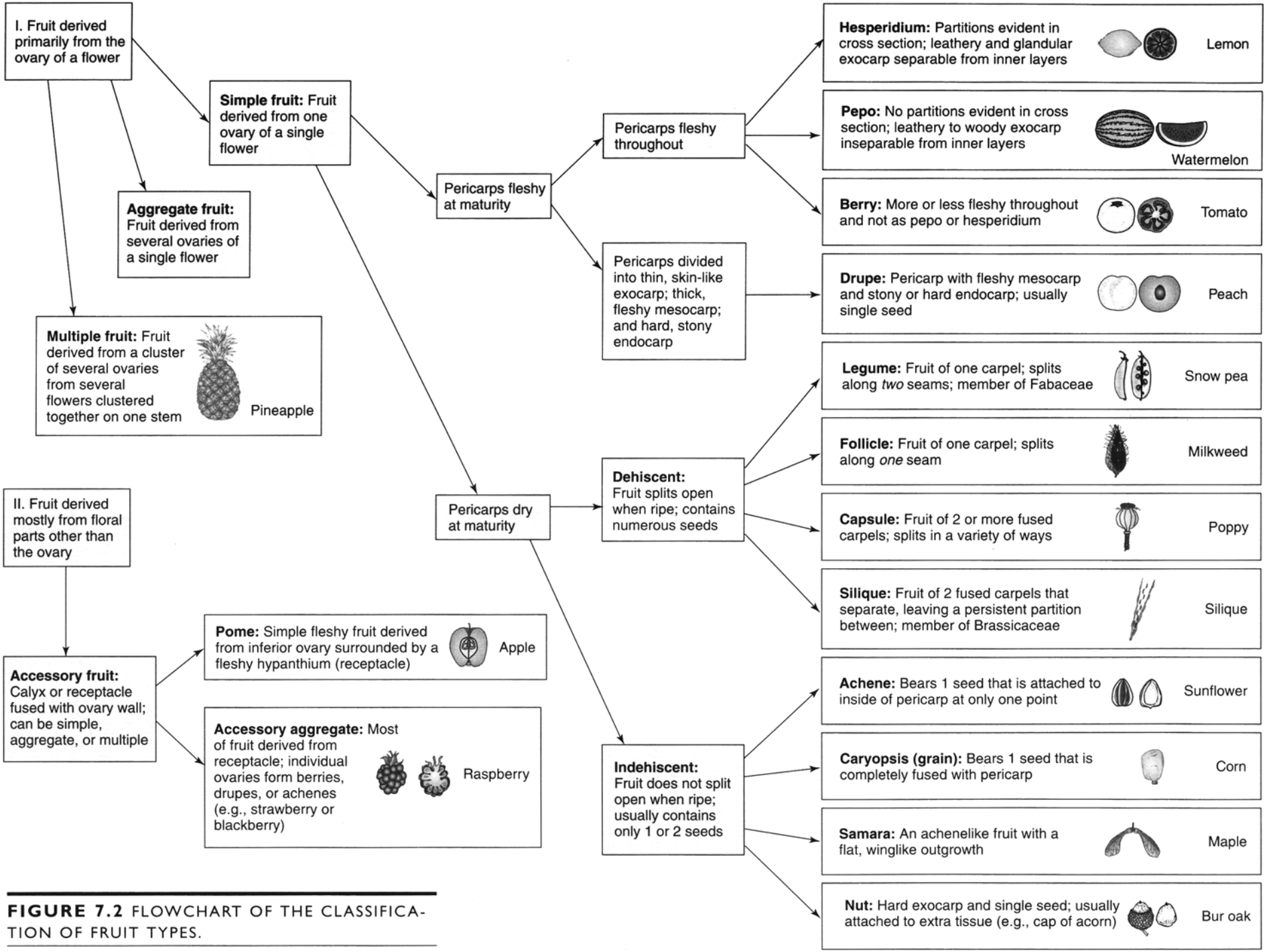
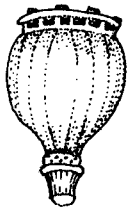


FIGURE 7.2 FLOWCHART OF THE CLASSIFICATION OF FRUIT TYPES.

DRY DEHISCENT FRUITS

Follicle *Consolida*
Cruciferae

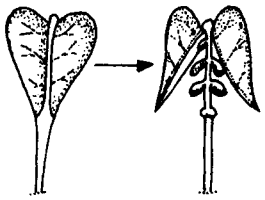


Capsule *Papaver*
*Papaveraceae

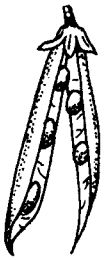
Capsule *Cerastium*
Caryophyllaceae

Capsule *Anagallis*
Primulaceae

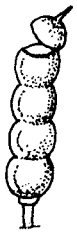
Siliqua *Arabis*
Cruciferae



Silicula *Capsella*
Cruciferae

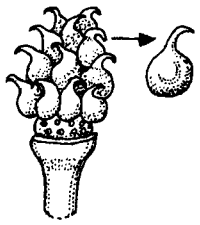


Legume *Vicia*
Leguminosae

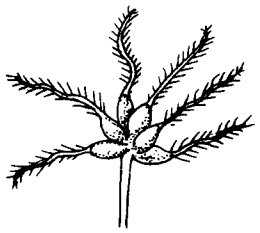


Lomentum *Ornithopus*
Leguminosae

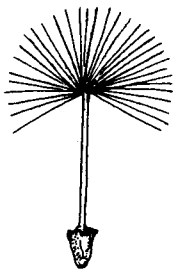
DRY INDEHISCENT FRUITS



Achenes *Ranunculus*
Ranunculaceae



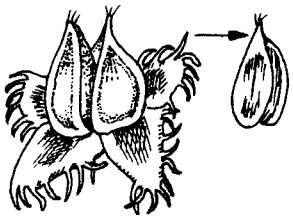
Achenes *Clematis*
Ranunculaceae



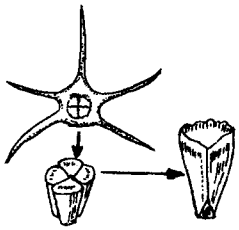
Cypsela *Taraxacum*
Compositae

Caryopsis *Arrhenatherum*
Gramineae

Caryopsis *Zea*
Gramineae

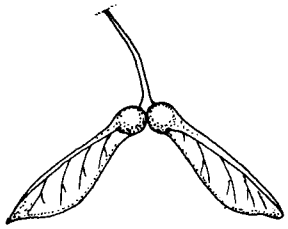


Nuts *Fagus*
*Fagaceae

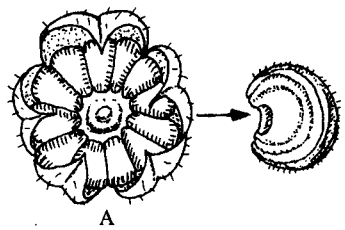


Nutlets *Lamium*
Labiatae

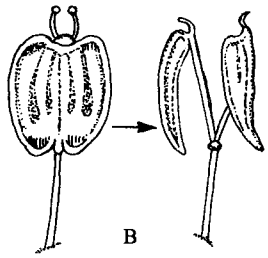
Samara (single) *Fraxinus*
*Oleaceae



Samara (double) *Acer*
*Aceraceae



A

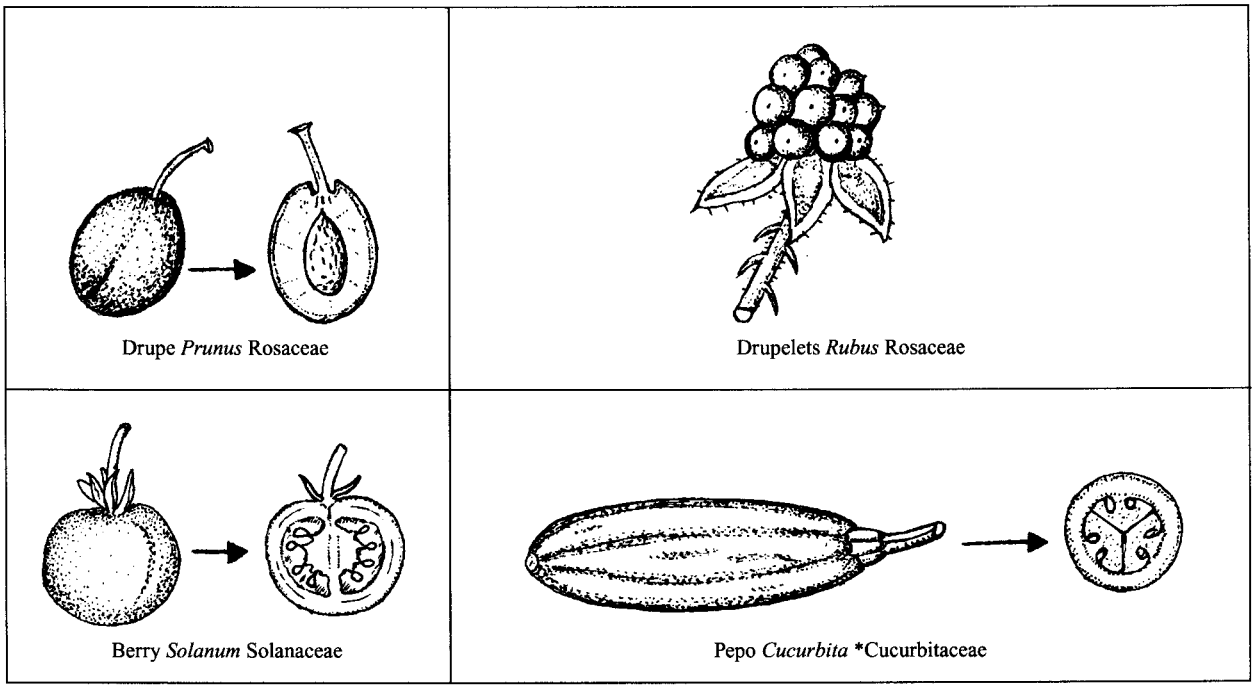


B

Schizocarp A. *Malva* Malvaceae B. *Heracleum* Umbelliferae

Fig. 25. Fruits (1).

FLESHY FRUITS



FALSE FRUITS

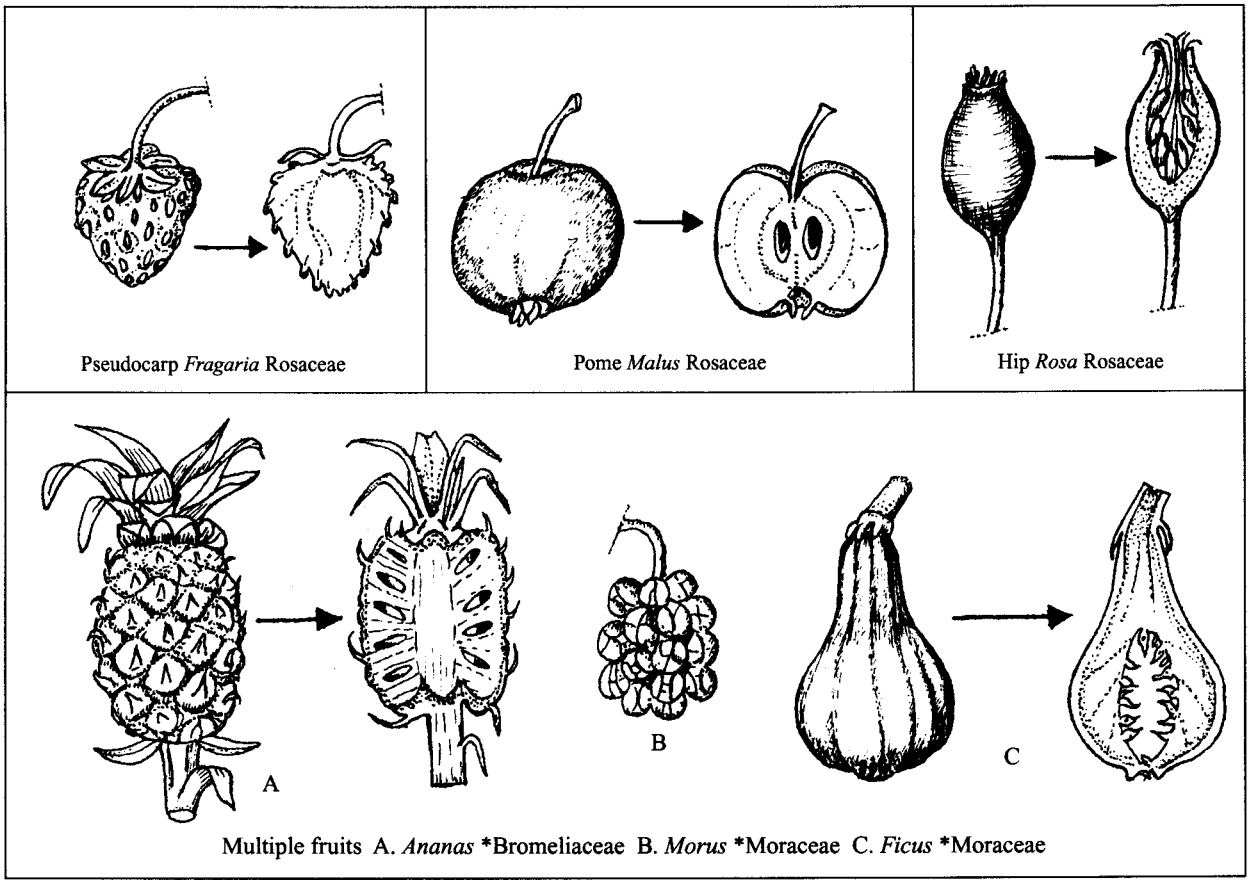
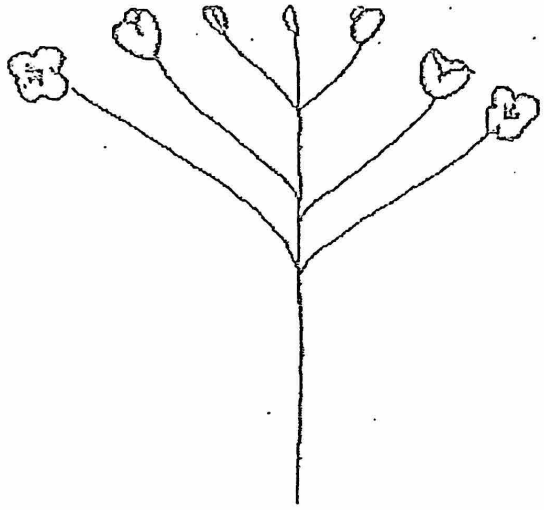
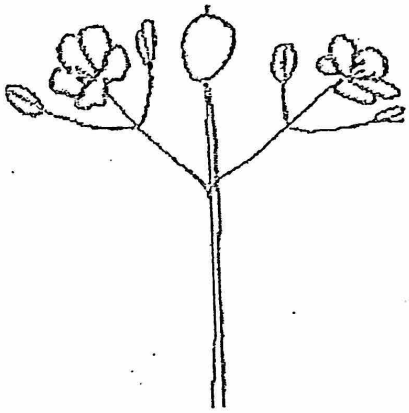


Fig. 25. Fruits (2).

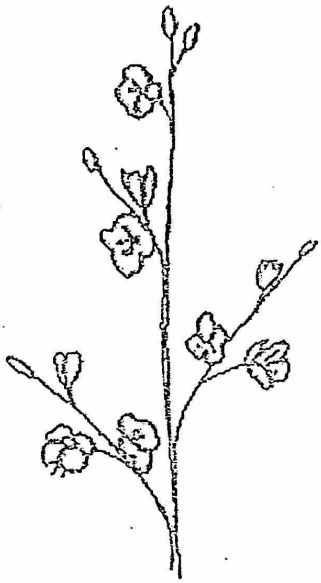
INFLORESCENCE TYPES



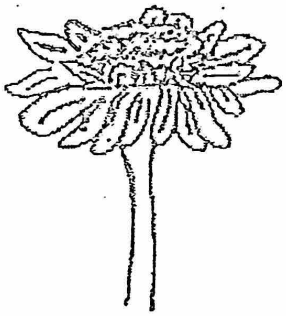
Corymb



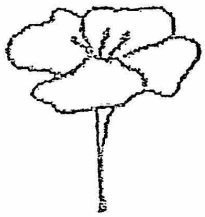
Cyme



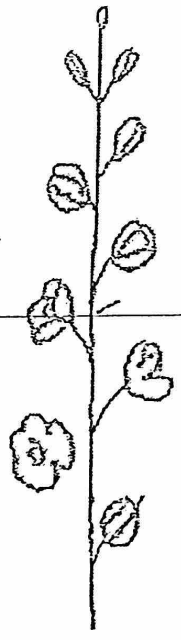
Panicle



Head

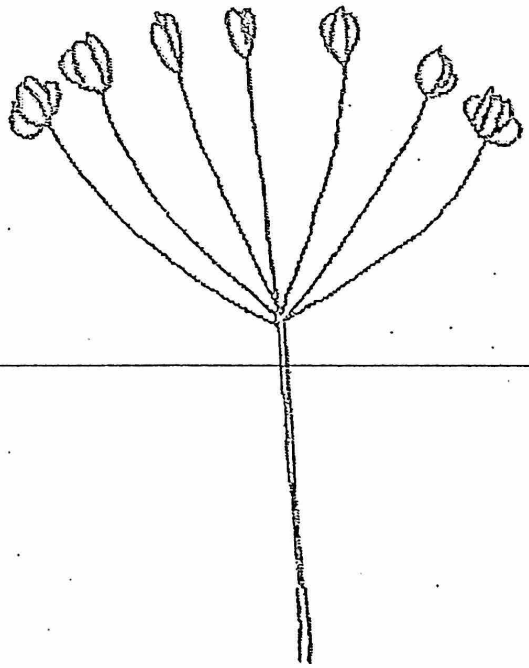


Solitary



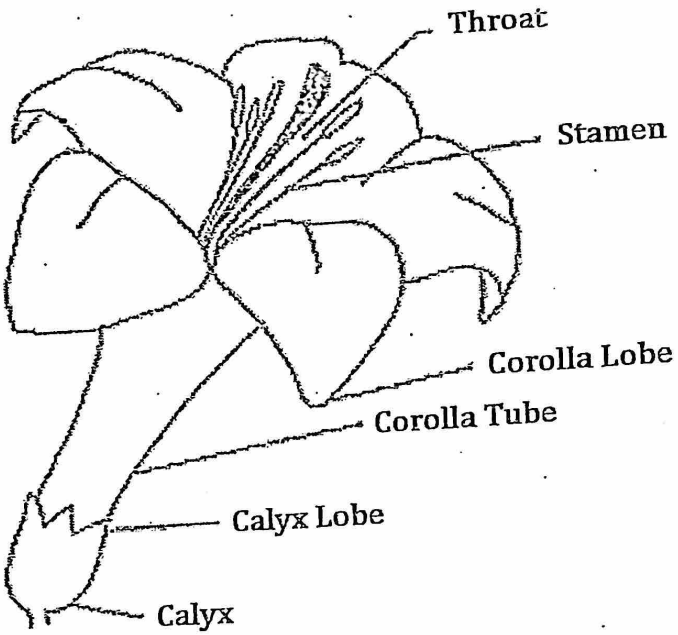
Raceme

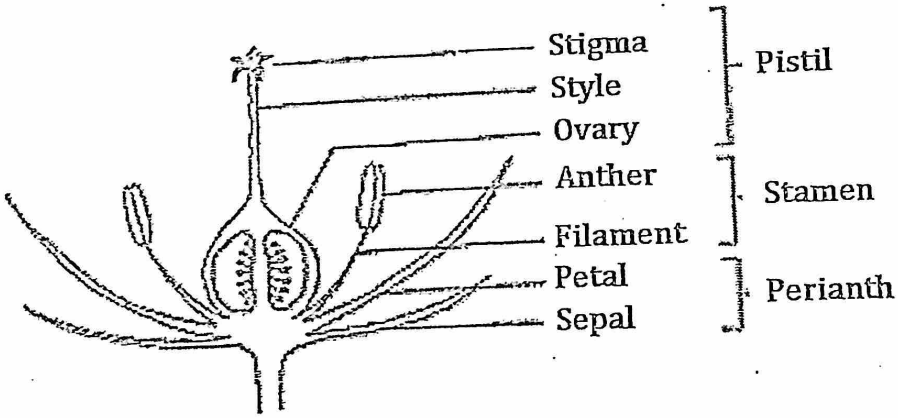
Spike



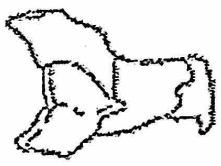
Umbel

FLOWER PARTS

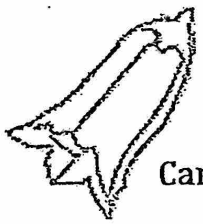




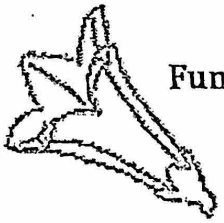
COROLLA TYPES



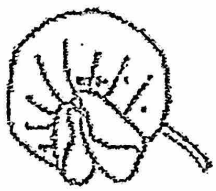
Bilabiate



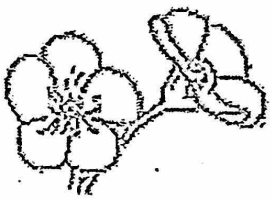
Campanulate



Funnelform

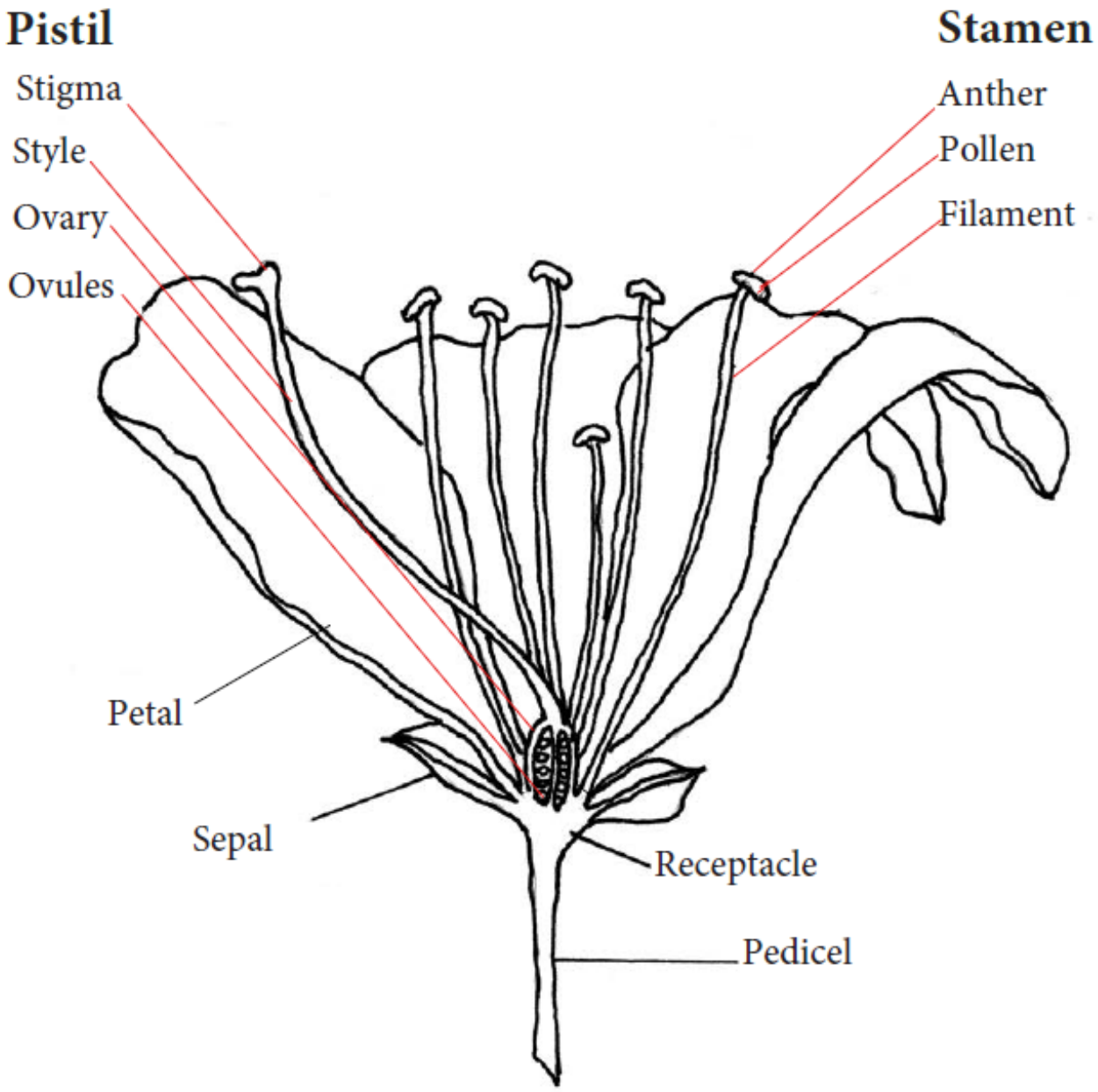


Papilionaceous



Rotate

Salverform


Pistil
Stamen
Stigma
Style
Ovary
Ovules
Anther
Pollen
Filament
Petal
Sepal
Receptacle
Pedicel